

**ABSTRACT**

One embodiment of the invention provides novel methods for reducing the generation of NO<sub>x</sub> emissions in industrial processes. These methods include the steps of: feeding a reaction feed mixture to a reaction vessel having an inlet and an outlet; producing a reaction product including a hot mixed gas stream in the reaction vessel; producing a cooled mixed gas stream by directing the hot mixed gas stream to a heat exchanger system; separating the cooled mixed gas stream into a cooled crude product stream and a cooled waste stream; producing a preheated waste stream by directing the cooled waste stream to a heat exchanger system; and incinerating the preheated waste stream by directing it to an incinerator. Upon incineration of the preheated waste stream, a decreased amount of NO<sub>x</sub> emissions is produced when compared to the amount of NO<sub>x</sub> emissions which would have been produced by incinerating the cooled waste stream.